

Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process . . . (Office Action, p. 2).

On the other hand:

[T]he rule is well established that where one has produced an article in which invention rests over prior art articles, and where it is not possible to define the characteristics which make it inventive except by referring to the process by which the article is made, he is permitted to so claim his article . . . Atlantic Thermoplastics Co. v. Faytex Corp., 23 U.S.P.Q.2d 1481, 1490 (Fed. Cir. 1992).

It requires no argument to establish the proposition that as a rule a claim for an article of manufacture should not be defined by the process of producing that article. On the other hand, when a man has made an invention his right to a patent for it, or his right to a claim properly defining it, is not to be determined by the limitations of the English language. When the case arises that an article of manufacture is a new thing, a useful thing, and embodies invention, and that article cannot be properly defined and discriminated from the prior art otherwise than by reference to the process of producing it, a case is presented which constitutes a proper exception to the rule

Whether the invention be defined in terms of the structure of the [chemical] compound, or its novel physical characteristics, or by defining it in terms of the process by which it is produced or in a proper case, by employing more than one of these methods of defining the invention, the right to a patent on the invention is the ultimate consideration, subject to the conditions set forth in 35 U.S.C. §112. "In a proper case" does not mean that an applicant must prove the impossibility of defining the invention other than by using more than one of the above methods. In Re Bridgeford, 149 U.S.P.Q. 55, 57-58 (CCPA, 1966).

By failing to consider the impact of the claimed process limitations on Applicants' absorbent article, the Examiner has created a circuitous claim rejection which is not supported by any statute. The Examiner rejects the claims based on Applicants' alleged failure to recite product limitations which distinguish over the art. Yet, as explained in the

foregoing case law, the reason the process limitations are essential in distinguishing the invention over the art is because the differences cannot be articulated as product limitations.

The existence of significant differences between the claims and the prior art is apparent from the process limitations. Independent Claim 24 requires dry cellulose fibers bonded with a partially neutralized carboxylic acid odor control agent in the presence of heat for a time sufficient to cause dehydration. As illustrated on page 8 of Applicants' specification, the term "dehydration" does not mean the mere evaporation of water. Instead, dehydration is a chemical process whereby sufficient heat causes chemical disassociation of water molecules from the cellulose molecules and the carboxylic acid odor control agent.

The dehydration reaction results in bonding of the carboxylic acid odor control agent to the cellulose, possibly forming an ester as illustrated on page 8. It is not certain whether the illustrated ester is exclusively formed, because other reactions are possible. However, what is clear from Applicants' claims and the specification is that dehydration (a chemical process which releases water) is employed to effect the bonding. As is known in the chemical arts, a dehydration reaction requires a significant amount of heat to cause otherwise stable hydrated molecules to release water.

The dehydration reaction causes a form of bonding (most likely covalent, as illustrated on page 8) which makes it difficult to separate or disassociate the carboxylic acid odor control agent from the cellulose fibers. In essence, the carboxylic acid odor control agent and cellulose become part of the same chemical compound or molecule. Thus, when the absorbent article is insulted with a liquid, the odor control agent remains on the cellulose and does not wash away.

Jordan et al. does not disclose an absorbent article comprising dry cellulose fibers bonded with a partially neutralized carboxylic acid odor control agent in the presence of heat for a time sufficient to cause dehydration. Jordan et al. also does not disclose the same product produced by a different process.

The Examiner refers to page 4, line 51 to page 5, line 46 and page 6, lines 4-7 of Jordan et al. The passage at page 4, line 51 to page 5, line 15 discloses cellulose fibers. The passage at page 5, lines 16-45 describes a pH control system prepared by adding an

acidic buffering agent to the cellulose fibers. As explained on page 5, line 54 to page 6, line 7, the acidic buffering agent may include acidified cellulose fibers used for ion exchange. Acidification of cellulose is quite different from dehydration in the presence of heat as claimed by Applicants. Whereas dehydration involves the release and removal of associated water molecules, acidification involves the addition of oxygen and/or hydrogen to cellulose.

The Examiner refers specifically to ion-exchanging fibers disclosed at page 6, lines 4-7. First, there is no disclosure of modifying cellulose fibers with a carboxylic acid odor control agent. Second, Applicants' claimed odor control system probably involves formation of a covalent bond to the cellulose, not an ionic bond. Third, the patents listed at page 6, lines 4-7 have not been incorporated by reference and do not form part of the disclosure of Jordan et al. The instant claim rejection, based on 35 U.S.C. §102(b), requires a showing that Applicants' claim limitations are disclosed in a single reference.

Furthermore, the three patents listed at page 6, lines 4-7 of Jordan et al. are unrelated to the invention. U.S. Patent 4,200,735 discloses a cellulose ion exchange fiber having an amine linkage, with two carboxylic acid metal salts attached at the amine linkage. The disclosed compound would not result from a heat-induced dehydration of cellulose and a carboxylic acid compound. The reference does not disclose how the nitrogen atom is attached to the cellulose or how the carboxylic acid salts are attached to the nitrogen. The attachment does not involve either the hydroxyl group on the cellulose or the carboxyl group on the acid salt (as would be the case with a dehydration reaction).

U.S. Patent 3,854,868 discloses converting cellulose into sodium cellulosate by reacting cellulose with sodium alkoxide, washing with tertiary butanol, then reacting with hydrocarbon sultone. The resulting product contains sulfur and is not useful as an odor control agent. Applicants' product-by-process claims require the use of carboxylic acid odor control agents and do not produce sulfur-containing compounds.

U.S. Patent 3,533,725 discloses wood fibers having ion exchange properties. Cellulose can be reacted with sodium chloroacetate or iron to form a salt having ion exchange properties (Col. 3, lines 28-44). Then a polymerization catalyst system is

controllably placed on the fibers using ion exchange bonding (Col. 1, lines 32-38, Col. 3, lines 60-75). This reference has nothing to do with bonding a carboxylic acid odor control agent to cellulose fibers via dehydration. Conversely, Applicants' claims have nothing to do with polymerization catalyst systems.

For at least the foregoing reasons, independent Claim 24 is not anticipated by Jordan et al. Claims 25-28, 30, 32-35, 39-40, 43-45 and 52-53 depend from Claim 24, and are also not anticipated.

The Examiner rejected Claims 24-28, 30, 32-35, 37, 39-40 and 52 under 35 U.S.C. §102(b) as anticipated by U.S. Patent 5,137,537 to Herron et al. This rejection is respectfully traversed. Herron et al. discloses a method of making individualized crosslinked cellulose fibers. The process cited by the Examiner (Col. 1, line 57 – Col. 2, line 8, Col. 3, lines 50-56) includes the steps of impregnating swollen fibers with a crosslinking agent, dewatering and defiberizing the fibers, and drying the fibers at elevated temperature to effect crosslinking. While the crosslinking agent may be a polycarboxylic acid, the reference does not disclose a partially neutralized carboxylic acid odor control agent as required by Claim 24.

The product of Herron et al. is different from the product produced by Applicants' claims. If Applicants were to employ a carboxylic acid odor control agent having no degree of neutralization, then all of the carboxyl groups would be available for reaction with cellulose fibers via dehydration. While this would result in crosslinking of cellulose fibers, it would not leave any unreacted carboxyl groups available for odor control. Applicants do not seek to achieve crosslinking by reacting multiple carboxyl groups in a single odor control monomer with cellulose. Instead, Applicants seek to react at least one carboxyl group per molecule with cellulose to achieve bonding, leaving as many reactive groups as possible to achieve odor control.

If Applicants' carboxylic acid odor control agent had no degree of neutralization, then the resulting product might include highly crosslinked cellulose fibers of Herron et al. with no odor control properties. If Applicants' carboxylic acid odor control agent had 100% neutralization, then odor control properties would be maintained, but there

would be no reaction with cellulose via dehydration. By using a partially neutralized carboxylic acid odor control agent, bonding with cellulose via dehydration is made possible without eliminating the reactive sites available for odor control.

For at least these reasons, Herron et al. does not anticipate Claims 24-28, 30, 32-35, 39-40, 43-45 or 52-53.

b) Claim Rejections Based On 35 U.S.C. §103(a)

The Examiner rejected Claims 29, 31, 36-38, 41-42 and 49-51 under 35 U.S.C. §103(a) as obvious over Jordan et al. (EP 0,311,344). This rejection is respectfully traversed. As explained above, Jordan et al. does not disclose or suggest the limitations of Claim 24, from which these claims depend.

Further regarding Claim 29, it would not have been obvious to modify the article of Jordan et al. to encompass swim wear. Jordan et al. (unlike Applicants' claims) is directed to a pH control system in an absorbent article. Such a system for controlling pH would be inoperative in an environment overwhelmingly dominated by swim water.

Further regarding Claims 31 and 36-38, it would not have been obvious to modify the article of Jordan et al. to encompass an absorbent drape, bandage or medical wipe. Jordan et al. is directed to a pH control system for maintaining the pH of urine and feces discharged into the article at below about 7.5 (See Abstract). A person skilled in the art would not have been motivated to use such an article in medical applications where the pH is otherwise controlled, different, and/or does not present an issue.

Further regarding Claims 41, 42 and 49-51, it would not have been obvious to modify the article of Jordan et al. to seek optimum ranges (for odor control) of partially neutralized carboxylic acid presented in Applicants' claims. Jordan et al. employs different chemistries than Applicants (as explained above), and is directed to pH control. A person skilled in the art would have been motivated by Jordan et al. to seek optimum ranges for controlling pH, but not odor.

The Examiner rejected Claims 29, 31, 36, 38, 41-45, 49-51 and 53 under 35 U.S.C. §103(a) as obvious over Herron et al. (U.S. Patent 5,137,537). This rejection is

respectfully traversed. As explained above, Herron et al. does not disclose or suggest the limitations of Claim 24, from which these claims depend.

Further regarding Claim 29, Herron et al. provides no motivation to use the disclosed crosslinked fibers in swim wear. Regarding Claims 31 and 36-38, there is no apparent motivation to use the crosslinked fibers in an absorbent drape, bandage or wipe. The crosslinked fibers would be more expensive and harder to process than conventional cellulose, and may not present a meaningful advantage in these applications.

Regarding Claims 41, 42, 43-45 and 49-51, Herron et al. does not describe a partially neutralized carboxylic acid odor control agent and provides no motivation to optimize a degree of neutralization. Maximum crosslinking (as sought by Herron et al.) would be achieved at zero neutralization.

Regarding Claim 53, the inclusion of superabsorbent would probably interfere with the crosslinking sought by Herron et al. A person skilled in the art would not have been motivated to so modify the article of Herron et al.

The Examiner rejected Claims 46-48 under 35 U.S.C. §103(a) as obvious over Jordan et al. in view of Trinh et al. (U.S. Patent 5,874,070). This rejection is respectfully traversed. These claims are patentable over Jordan et al. for at least the same reasons as Claim 24. Furthermore, as explained above, Jordan et al. discloses a pH control system (not an odor control system), and employs different chemistries than would result from Applicants' claims. A person skilled in the art would not have been motivated to modify the pH control system with a chelating agent or zinc salt because there is no suggestion that a chelating agent or zinc salt would assist in the pH control system sought by Jordan et al.

The Examiner rejected Claims 46-48 under 35 U.S.C. §103(a) as obvious over Herron et al. in view of Trinh et al. This rejection is respectfully traversed. These claims are patentable over Herron et al. for at least the same reasons as Claim 24. Furthermore, the objective of Herron et al. is to achieve controlled crosslinking of cellulose fibers. A person skilled in the art would not have been motivated to include a chelating agent or zinc salt because these ingredients would likely interfere with, lessen or possibly eliminate the crosslinking sought by Herron et al. Inasmuch as Herron et al. does not disclose a partially

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neutralized carboxylic acid odor control agent, the inclusion of chelating agent or zinc salt may defeat the chemistries employed.

c) Conclusion

Applicants believe that the claims are in condition for allowance. If the Examiner feels that any issues remain unresolved, then Applicants' attorney respectfully requests a telephone call, and a telephone interview.

Respectfully submitted,



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